	Application No.	Applicant(s)
Notice of Allowability	10/072,756 ⌟	LOUI ET AL.
	Examiner	Art Unit	
	DANIEL G. MARIAM	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *an amendment filed on November 25, 2005*.

2. ☒ The allowed claim(s) is/are *2-9 & 19-35 (will be renumbered as (will be renumbered as 1-25)*.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some*   c) ☐ None   of the:

       1. ☐ Certified copies of the priority documents have been received.

       2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

       3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

    * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.

    (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached

       1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____ .

    (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of

      Paper No./Mail Date _____ .

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)

2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)

3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____

4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

5. ☐ Notice of Informal Patent Application (PTO-152)

6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .

7. ☐ Examiner's Amendment/Comment

8. ☒ Examiner's Statement of Reasons for Allowance

9. ☐ Other _____ .

DANIEL MIRIAM
PRIMARY EXAMINER

Reasons for Allowance

1.   Claims 2-9 and 19-35 are allowed. The claims will be renumbered as 1-25.

2.   The following is an examiner's statement of reasons for allowance: the key difference between the instant invention and the closest prior art (Derksen, et al.) is the fact that Derksen, et al do not rely upon: determining number of clusters in the input image, estimating parameters of a probabilistic model describing the clusters, and assigning each image pixel to one of the dusters according to the probabilistic model as defined by independent claim 3; creating a labeled training set belonging to a particular class, determining a number of components required to learn a density function of a given class with the labeled training set as input, estimating parameters of each density function in a mixture model, and assigning each image pixel to one of the classes according to the mixture model as defined by independent claim 4; determining a number of clusters in the input image using a Kullback-Leibler (KL) divergence method, estimating mean and covariance parameters of a normally distributed probabilistic model describing the clusters using an Expectation-Maximization (EM) technique, and assigning each image pixel to one of the clusters according to the normally distributed probabilistic model by computing a posterior probability using Bayes rule as defined by independent claim 5; creating a labeled training set belonging to a particular class, determining a number of components required to learn a density function of a given class with the labeled training set as input, using a Kullback-Leibler (KI,) divergence method, estimating the mean and covariance parameters of each density function in a Gaussian mixture model using an Expectation-Maximization (EM) Technique, and assigning each image pixel to one of the class according to the Gaussian mixture model as defined by independent claim 6; and maximizing a joint likelihood of class and cluster

by computing a class conditional probability using Bayes rule, assigning each of the cluster probability maps to one of the classes according to the class conditional probability, and computing the modified class probability map by weighting each pixel probability of the class probability map by the corresponding pixel probability of the cluster probability map as defined by independent claim 7 for classification of image regions by probabilistic merging of a class probability map and a cluster probability map. These features in combination with the other elements of the claims are not taught or fairly suggested by the prior art of the record.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

3.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL G. MARIAM whose telephone number is 571-272-7394. The examiner can normally be reached on M-F (7:00-4:30) FIRST FRIDAY OFF.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, BHAVESH M. MEHTA can be reached on 571-272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DANIEL G MARIAM
Primary Examiner
Art Unit 2625

December 7, 2005